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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/590,496	06/09/00	LIPKA	NAD-0001

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EXAMINER
HA, N

ART UNIT	PAPER NUMBER
2831	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/590,496

Applicant(s)

LIPKA ET AL.

Examiner

Nguyen T Ha

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 August 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 25-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, and 10-24 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-24, drawn to asymmetric supercapacitor, classified in class 361, subclass 502.
 - II. Claims 25-29, drawn to method for making asymmetric supercapacitor , classified in class 29, subclass 25.03.

The inventions are distinct, each from the other because of the following reasons:

Inventions II and I are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the process as claimed could be use to made a different materials product than the product claimed, such as a copper oxide for the positive electrode.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Leah M. Reimer (Reg. No. 39,341) on 4/27/01 a provisional election was made without traverse to prosecute the invention of group I, claims 1-24. Affirmation of this election must be made by applicant in replying

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to this Office action. Claims 25-29 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Specification

2. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

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Extensive mechanical and design details of apparatus should not be given.

The abstract of the disclosure is objected to because on page 19 lines 1,3,5,7 and 10 "comprises" and "comprising" and "comprise" are legal phraseology.

Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 1-4, and 8,10-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suhara et al (5,953,204) in view of Furukawa et al (4,820,599).

Regarding claim 1, Suhara discloses the capacitor shown in figure 1 comprising a positive electrode (1) comprises a current collector (3), a negative electrode (5) comprises carbonaceous active material (shown in the abstract), an electrolyte (7), and a separator (8). Suhara discloses all the limitations in the above, except for the positive electrode comprising an active material selected from the group consisting of manganese dioxide, silver oxide, iron sulfide and mixtures thereof. However, Furukawa teaches a positive electrode comprising of manganese dioxide (column 2 lines 36-42). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Suhara capacitor as taught by Furukawa to have a positive electrode having an active material of manganese dioxide because manganese dioxide has a low degree of polarization and remains essentially uncharged during both charge and discharge processes.

Regarding claim 2, Suhara discloses a capacitor wherein the negative electrode further comprises a current collector (4).

Regarding claim 3, Suhara discloses a capacitor wherein current collector is selected from the group consisting of metal foil, metal mesh, and electrically conductive polymer composites and expanded metal (column9 lines 60-65).

Regarding claim 4, Suhara discloses a capacitor wherein carbonaceous active material comprising nanofibrous material (column 6 lines 4-10).

Regarding claim 8, Suhara discloses a capacitor wherein the negative electrode has a thickness about 50 microns to about 375 microns (column 21 lines 19-20).

Regarding claim 10, Suhara discloses a capacitor wherein the negative electrode further comprises a collection coating (column 21 lines 20-22).

Regarding claim 11, the teaching of Furukawa includes the positive electrode comprised of manganese dioxide (column 6 lines 29-34).

Regarding claim 12, the teaching of Furukawa includes the manganese dioxide is nanostructured (column 6 lines 35-36).

Regarding claim 13, the teaching of Furukawa includes the positive electrode active material is nanostructured (column 6 lines 35-36).

Regarding claim 14, the limitation of the active material is applied to the current collector by thermal spray has been considered, however, the presence of process limitations in product claims, which product does not otherwise patentably distinguish over the prior art, cannot impart patentability to the product. In re Stephens 145 USPQ 656 (CCPA 1965).

Regarding claim 15, the teaching of Furukawa includes the positive electrode further comprises a binder (column 3 lines 64-67).

Regarding claim 16, Suhara discloses a capacitor wherein the current collector for the positive electrode is selected from the group consisting of metal foil, metal mesh, electrically conductive polymer composites and expanded metal (column 3 lines 63-65).

Regarding claims 17&18, Suhara discloses the capacitor wherein the positive electrode has a thickness less than 50-250 microns (column 21 lines 11-14).

Regarding claims 19&20, Suhara discloses a capacitor wherein the electrolyte is selected from the group consisting of aqueous electrolyte solution, organic electrolyte and organic electrolyte solution, wherein the aqueous electrolyte is selected from the group consisting of aqueous solutions of hydroxides of alkali metals, aqueous solutions of carbonates of alkali metal, sulfuric acid and mixtures thereof (column 29 lines 41-46).

Regarding claim 21, Suhara discloses the capacitor shown in figure 1 comprising a positive electrode (1) comprises a current collector (3), a negative electrode (5) comprising carbonaceous active material (shown in the abstract), an electrolyte (7), and a separator (8). Suhara discloses all the limitations in the above, except for the positive electrode comprises an active material selected from the group consisting of manganese dioxide, silver oxide, iron sulfide and mixtures thereof. However, Furukawa teaches the positive electrode comprising manganese dioxide (column 2 lines 36-42). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Suhara capacitor as taught by Furukawa to have a positive electrode having an active material of manganese dioxide because manganese dioxide has a low degree of polarization and remains essentially uncharged during both charge and discharge processes.

Regarding claim 22, Suhara discloses a capacitor wherein carbonaceous active comprising nanofibrous material (column 6 lines 4-10).

Regarding claim 23, the teaching of Furukawa includes the manganese dioxide is nanostructured (column 6 lines 35-36).

Regarding claim 24, Suhara and Furukawa discloses all the limitations recited to claims 22&23.

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suhara et al (5,953,204) in view of Furukawa et al (4,820,599) as applied to claim 4, and further view of Tennent et al (6,031,711).

Dr 5/7/01

Regarding claims 5-7, Suhara and Furukawa discloses all the limitations recited to claim 4, except for the carbonaceous active material is carbon fibers less than 10-100nm in diameter. However, Tennent discloses the carbonaceous active material is carbon fibers less than 10-100nm in diameter (column 9 lines 49-54). It would have been obvious to one having ordinary skill in the art at the time the invention was made to have carbon fibers less than 10-100 nm in diameter as taught by Tennent in order to make the supercapacitor useful in electrodes due to their high surface area.

Allowable Subject Matter

5. Claim 9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

With respect to claim 9, the prior art alone or in combination does not teach the limitations of the carbonaceous active material in non-woven mat, woven cloth or two dimensional sheet comprising carbonized polymer.

Citation of Relevant Prior Art

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Weiss et al discloses electrochemical device combined capacitor.
- b. Amatucci discloses carbon fabric supercapacitor structure.
- c. Yoneda discloses the cell and method of producing the same.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nguyen T Ha whose telephone number is 703-308-6023. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dean Reichard can be reached on 703-308-3682. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

NH
May 7, 2001

Dean A. Reichard 5/7/01
Dean A. Reichard
Primary Examiner